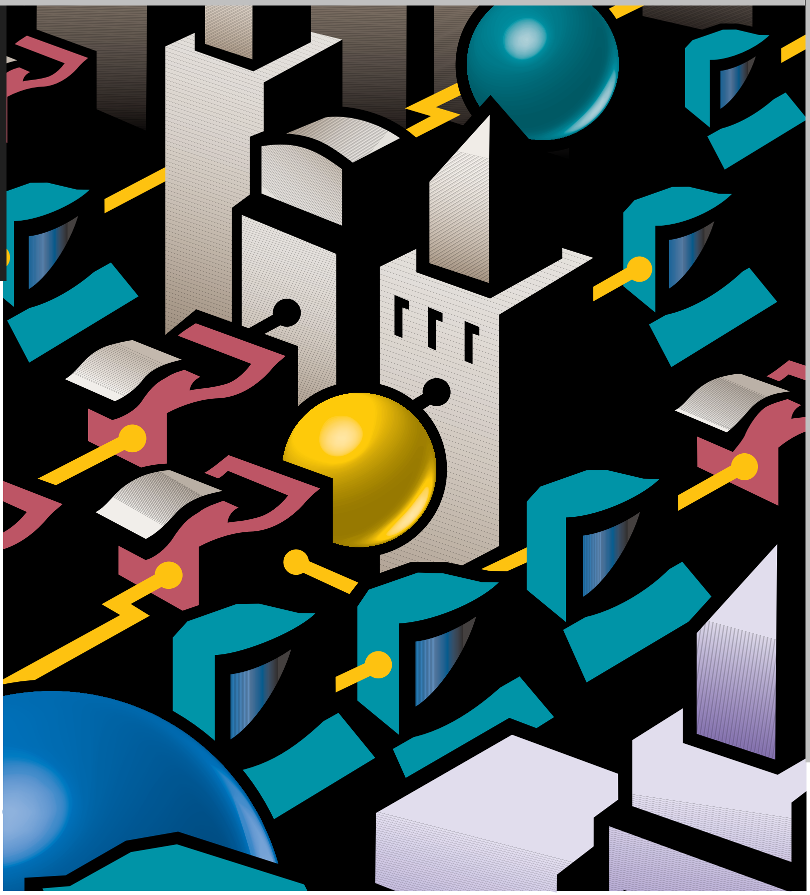
Installation and Reference Guide

HP J2611B



HP AdvanceStack 10Base-T Hub-16U

HP Customer Support Services

How to get the latest software/agent firmware

You can download:
HP AdvanceStack 8U/16U SNMP firmware: j3133a.exe

from the HP BBS, HP FTP Library Service, CompuServe, and the World Wide Web. After you download the file, extract the file by typing filename /x. For example j3133a.exe /x

HP BBS
Set your modem to N-8-1, set speed up to 14400 bps, and with your telecommunication program (e.g., Windows Terminal) dial (208) 344-1691 to get the latest software for your HP networking product.

HP FTP Library Service
1) FTP to Internet IP Address - ftp-boi.external.hp.com
2) Log in as anonymous and press Return at the password prompt.
3) Enter bin to set the transfer type.
4) Enter cd /pub/networking/software
5) Enter get *filename* to transfer the file to your computer and quit.

CompuServe
1) Login to CompuServe.
2) Enter go hpsys
3) Enter lib 7
4) Enter download *filename* and then quit.

World Wide Web
http://www.hp.com/go/network_city

Select the“ Support” section, then “Software Downloads and Patches”. Download the file you need and extract it by typing: *filename* /x

Do you have questions about designing your expanding network? From this web site, you can also download the *Designing HP AdvanceStack Workgroups Networks Guide* which addresses capacity planning or dial 1-800-752-0900 to receive a copy through the mail.

HEWLETT® PACKARD

Obtain the latest agent firmware (j3133a.exe) from:

HP FTP Library:	ftp ftp-boi.external.hp.com
World Wide Web:	http://www.hp.com/go/network_city
HP BBS	(208) 344-1691
CompuServe	go hpsys lib 7 download j3133a.exe

HP NETWORK CONNECTIVITY

HP AdvanceStack Hub-16U

Installation and Reference Guide

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HP J2611B

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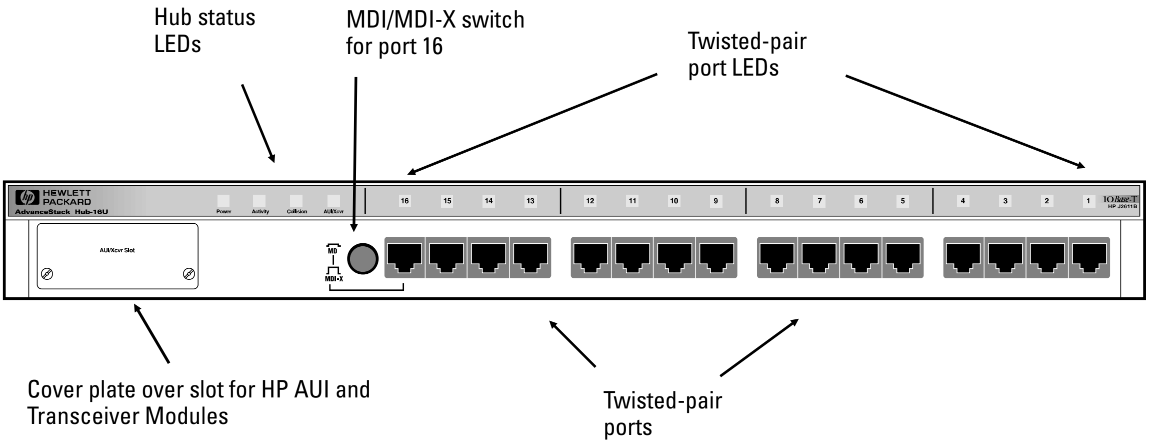
http://www.hp.com/go/network_city

HP AdvanceStack Hub-16U

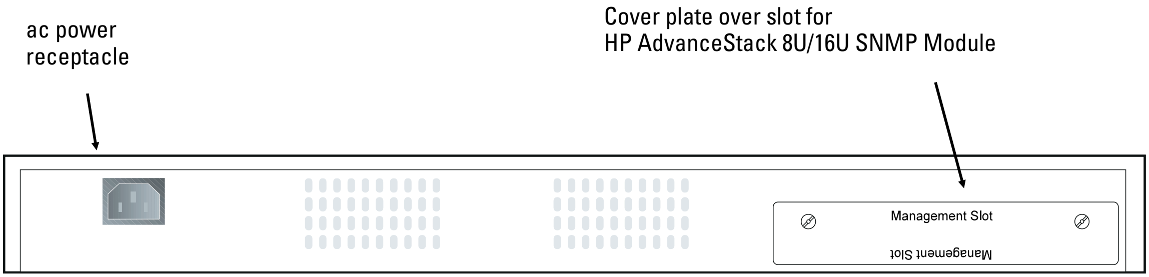
At A Glance

The HP J2611B AdvanceStack Hub-16U is a multiport repeater with 16 twisted-pair network ports. With this hub, you can connect computers and other devices together in an unshielded twisted-pair cable network. The hub is compliant with the IEEE 802.3 Type 10Base-T standard and supports both 802.3 and Ethernet networks.

Front of the Hub



Back of the Hub


ac power receptacle
Cover plate over slot for HP AdvanceStack 8U/16U SNMP Module
Management Slot
Management Slot

Features

Network Connections	■ 16 RJ-45 (twisted-pair) ports to connect to end nodes or other devices. ■ A Media Dependent Interface (MDI) switch for Port 16 which allows you to connect either an end node (MDI-X position) or to cascade a hub (MDI position) to the port, using a "straight-through" twisted-pair cable in both cases.
Upgradeable Design	■ A management slot in the back of the hub enables you to install an HP AdvanceStack 8U/16U SNMP Module. With the module, you can serially connect an ASCII console to the module to configure, monitor, and troubleshoot the hub. ■ An AUI/Xcvr Slot in the front of the hub for several types of transceiver modules including ThinLAN, AUI, twisted-pair, and fiber-optic. With the optional ThinLAN transceiver, you can "hot-swap" a hub. Hot-swap means that removing a hub connected to other hubs through the ThinLAN transceiver does not bring down the network; you can upgrade or replace hubs in a stack with the network up and running. All modules with an external transceiver allow you to connect to an Ethernet/IEEE 802.3 LAN. The twisted-pair module adds another RJ-45 port for a total of 17 twisted-pair ports on the hub. The fiber-optic module allows you to connect your hub to a fiber-optic backbone.
Modular, Easy-to-Use Design	■ LEDs showing power, activity, collisions, and port status provide quick, easy-to-read hub status information and troubleshooting assistance. ■ Metal brackets (included with the hub) that can be easily attached to the hub for mounting the hub in a standard 19-inch telco rack or on a wall.
Standards-Based Compatibility	■ Compatible with the IEEE 802.3 Type 10Base-T standard to support both 802.3 and Ethernet networks.

Table of Contents

1 Installing the Hub

Installation Summary 1-2

Included Parts 1-2

1. Install add-in modules *(optional)* 1-3
   - HP AdvanceStack 8U/16U SNMP Module 1-3
   - HP Transceiver Modules 1-5

2. Verify the hub's operation 1-6

3. Mount the hub 1-8
   - Rack or Cabinet Mounting 1-9
   - Wall Mounting 1-10

4. Complete the network connections to the hub 1-11
   - Connecting Devices to the Hub 1-11
   - Cable management 1-12
   - Connecting Hubs Together 1-13
   - Connecting Hubs to Network Backbones 1-15

2 Troubleshooting

Troubleshooting Approaches 2-2

Diagnosing with the LEDs 2-3
- LED Pattern During Self-Test 2-3
- LED Error Indications 2-4

Installation Problems 2-6
- Incorrect Hardware Installation 2-6
- Cabling Problems 2-6

Unusual Network Activity 2-7

Diagnostic Tests 2-7
- Testing the Hub Only 2-8
- Testing Twisted-Pair Cabling 2-8
- Testing End-to-End Network Communications 2-9

Replacement Instructions 2-10

Customer Support Services 2-11
  HP BBS and World Wide Web 2-11
  Hewlett-Packard FTP Library Service 2-12
  CompuServe 2-13
  HP FIRST Fax Retrieval Service 2-14
  HP Network Phone-In Support (NPS) 2-14

3 Hub Reference

Front of the Hub 3-2
  Hub status LEDs 3-2
  Port status LEDs 3-3
  AUI/Xcvr Slot 3-3

Back of the hub 3-3

Hub Operation 3-4
  Collision Detection 3-4
  Auto-Partitioning 3-5
  Link Beat 3-5

A Cables and Connectors

Recommended Cables A-2

Twisted-Pair Cable/Connector Pin-Outs A-3
  Twisted-Pair Cable for Hub-to-Computer Network Connection . A-3
  Twisted-Pair Cable Pin Assignments A-4

ThinLAN Cable Requirements A-4

B Specifications

Safety and Regulatory Statements

Index

1

- Installation Summary
- Included Parts

1. Install Add-in Modules (Optional)

2. Verify the Hub's Operation

3. Mount the Hub

4. Complete the Network Connections to the Hub

Installing the Hub

Installation Summary

The basic hardware installation procedure for the Hub-16U is as follows:

1. Install the optional HP AdvanceStack 8U/16U SNMP Module and/or one of the optional HP Transceiver Modules.
2. Verify the hub's operation.
3. Mount the hub in a rack, on a wall, or place it on a tabletop.
4. Connect the hub to a network, and connect computer(s) and/or other device(s) to the hub's ports.

Included Parts

Each Hub-16U has the following components shipped with it:

- *HP AdvanceStack Hub-16U Installation and Reference Guide*—this manual (J2611-90101)
- A power cord, one of the following:

Australia/New Zealand	(8120-1369)
Denmark	(8120-2956)
Europe	(8120-1689)
Japan	(8120-4753)
Switzerland	(8120-2104)
United Kingdom	(8120-1351)
U.S./Canada	(8120-1378)

- accessory kit:
  - two mounting brackets
  - four rubber feet
  - one tie-wrap
  - four 3/8-inch M3 machine screws
  - four 5/8-inch number 12-24 screws

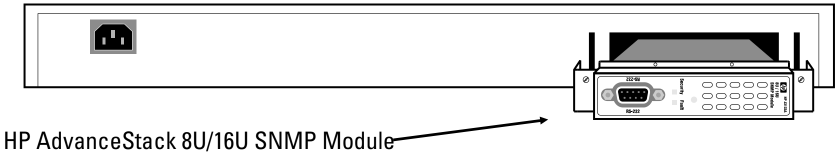
1. Install add-in modules *(optional)*

The Hub-16U can be custom-configured by installing an optional HP AdvanceStack 8U/16U SNMP Module or an HP Transceiver Module.

It may be more convenient to install these optional modules before installing the hub into a rack or other location. Inspect your installation site and identify whether the hub's module slots will be accessible.

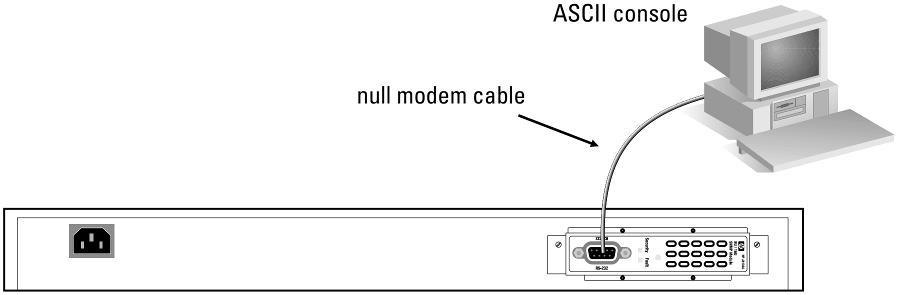
HP AdvanceStack 8U/16U SNMP Module

By installing an optional HP J3313A AdvanceStack 8U/16U SNMP Module, you can configure, monitor, and troubleshoot the hub from a PC running the ASCII console software or HP Interconnect Manager.



WARNING **Disconnect the power cord from the hub before installing the HP SNMP or HP Transceiver modules. Electrical shock or other injury may result if you attempt to install the module without disconnecting the power cord.**

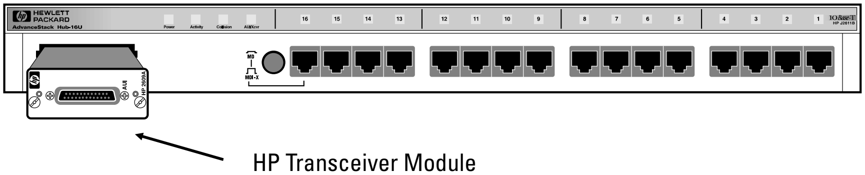
The PC serves as a console that enables you to configure, monitor, and troubleshoot the hub.



For more information about the ASCII console commands, see the documentation accompanying the optional HP AdvanceStack 8U/16U SNMP Module.

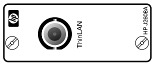
HP Transceiver Modules

The HP Transceiver Modules provide additional connectivity choices from the hub to Ethernet networks.

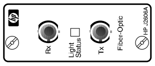


HP Transceiver Module

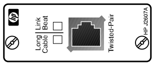
The following optional transceivers provide these additional connectivity options:



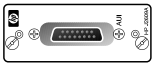
HP J2608A ThinLAN Transceiver Module for 10Base-2 networks



HP J2606A Fiber-Optic Transceiver Module for 10Base-FL networks



HP J2607A Twisted-Pair Transceiver Module for 10Base-T networks



HP J2609A AUI Port Module for connecting a standard IEEE 802.3 external transceiver to the hub

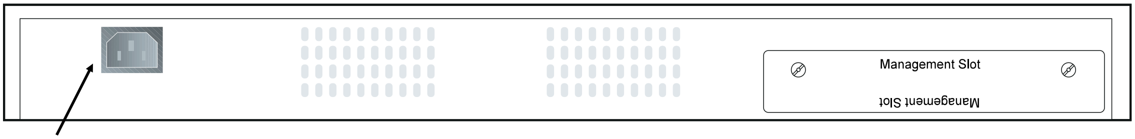
The HP AdvanceStack 8U/16U SNMP Module and HP Transceiver Modules and their cabling configurations are described in their accompanying documentation.

2. Verify the hub's operation

To provide power to the hub, follow these steps:

1. Plug the power cord into the hub's power cord receptacle and into an ac power source.

Note **If your installation requires a different power cord than the one supplied with the hub, be sure to use a power cord displaying the mark of the safety agency that defines the regulations for power cords in your country. The mark is your assurance that the power cord can be used safely with the hub.**



Power receptacle
on the back of the hub

Note The hub does not have a power switch; it is powered on when the power cord is plugged in.

2. Check the LEDs on the hub's front panel.

   When the hub is powered on, it performs a self-diagnostic test. During the test, all of the hub LEDs are lit for approximately 3 seconds.

   When the self-test completes successfully, the following events occur:

   - the Power LED stays on
   - the twisted-pair Port LEDs enter their normal operating state
   - If an HP Transceiver module is installed, the AUI/Xcvr LED will display the state of that port

   A Port LED stays on if link beat has been detected at the port. A Port LED turns off if link beat is not detected. If you have an optional HP AdvanceStack 8U/16U SNMP Module installed, the Port LEDs have additional meanings. See the documentation accompanying the module for more information. If all of the Port LEDs stay on after 3 seconds and you have not connected end nodes to these ports, the hub has failed its self-test. See chapter 2, "Troubleshooting" for information about diagnosing your hub.

3. After the hub has passed its self-test, you are ready to mount the hub. Before mounting the hub, unplug it.

3. Mount the hub

The HP AdvanceStack Hub-16U can be mounted in three ways:

- in a rack or cabinet
- on a wall
- on a table

The hardware for mounting the hub is included in the accessory kit (5063-5995) packed with the hub. If you are mounting the hub to a wall, use the four 5/8-inch number 12 wood screws in the accessory kit.

Hewlett-Packard sells 19-inch free standing equipment racks. To order a rack for your hub, call HP at 1-800-538-8787 to order part number 46298D.

Mounting Precautions

Before mounting the hub, follow these mounting precautions:

- Plan the hub's location and orientation relative to other devices and equipment. Also consider the cabling that will be attached to the hub and ports that will be used. In the front of the hub, leave 3 inches (7.6 cm) of space for twisted-pair cables. In the back of the hub, leave 3 inches (7 cm) of space for the power cord, the 8U/16U SNMP module, and a serial cable.
- Ensure that the HP AdvanceStack hub(s) do not overload the power circuits, wiring, and over-current protection. To determine the possibility of overloading the supply circuits, add together the ampere ratings from the nameplates of all your hubs (and other equipment) installed on the same circuits and compare the total with the rating limits for the supply circuits.
- Make sure that the power source circuits are properly grounded, then use the supplied power cord to connect the HP AdvanceStack hub to the circuit. *See the Safety Statements at the end of this manual.*
- Do not install the HP AdvanceStack hub in an environment where the operating ambient temperature might exceed 55°C (131°F).
- Make sure the air flow around the sides and back of the hub is not restricted.

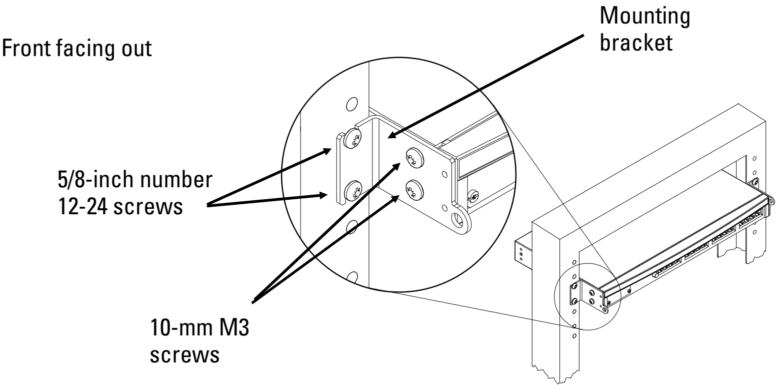
Rack or Cabinet Mounting

Warning **The rack or cabinet should be adequately secured to prevent it from becoming unstable and/or falling over.**

1. Using a flat-headed or Torx T-10 screwdriver, attach the mounting brackets to the hub with 10-mm M3 screws (included in the accessory kit). Note that the hub's case and the mounting brackets are designed to allow you to rack mount the hub with either the back or the front facing out.

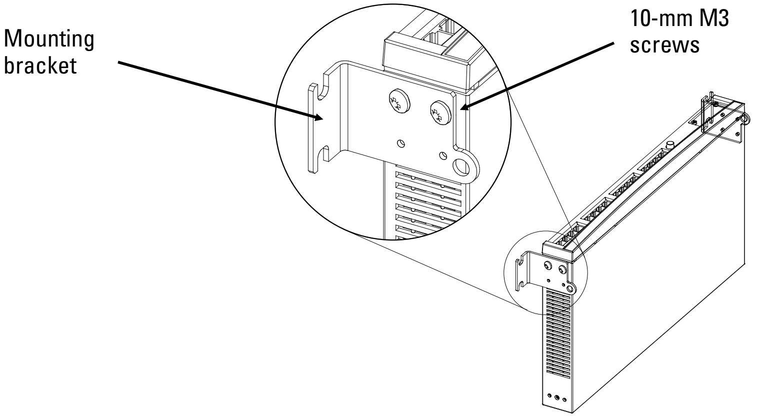
2. Position the hub in the rack or cabinet and slide it up or down until the rack holes line up with the bracket holes.

3. Then attach the hub to the rack with 5/8-inch number 12-24 screws included in the accessory kit with a Phillips crosshead screwdriver. (Some cabinets require number 10-32 screws instead, available as part number 2680-0302. Make sure you have screws that fit your cabinet or rack before mounting the hub.)

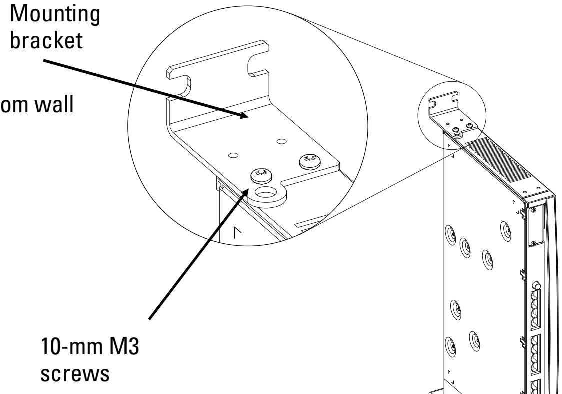


Wall Mounting

1. Using a flat-headed or Torx T-10 screwdriver, attach the mounting brackets to the hub with 10-mm M3 screws included in the accessory kit. Then attach the hub to a wood surface (minimum 1/2-inch plywood or equivalent) with 5/8-inch number 12 wood screws included in the accessory kit with a Phillips crosshead screwdriver.



Flat on wall



Straight out from wall

Table Mounting. To place the hub on a table or other horizontal surface, no special tools are necessary. Attach the self-adhesive rubber feet (included in the accessory kit) to the bottom of the hub. Be certain to pick a sturdy table in an uncluttered area. You may want to secure the hub's cables to the leg of the table to prevent people from tripping over them.

4. Complete the network connections to the hub

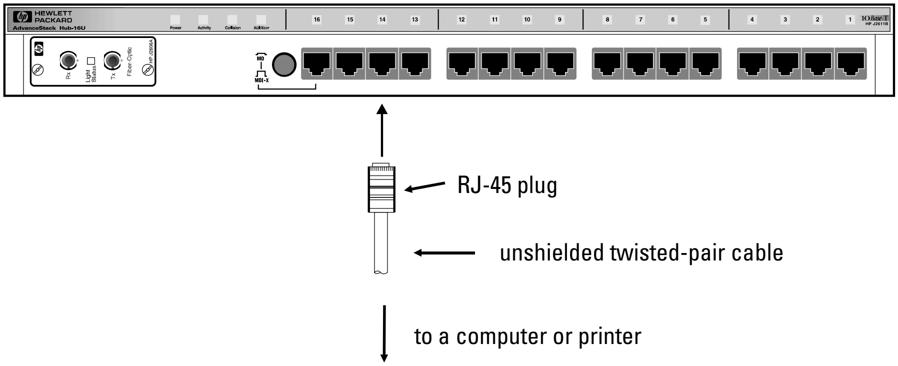
Reconnect the hub to the power source and then make the network connections to the hub. With the hub mounted, you are now ready to connect the hub to your network. Typical hub connections are:

- **Hub-to-device connections.** Connecting to network devices such as computers, and printers.
- **Hub-to-hub connections.** Connecting to another HP AdvanceStack 10Base-T hub, or other Ethernet hub.
- **Hub-to-network backbones.** Connecting to a network backbone.

This section describes the different ways you can connect your hub to your network.

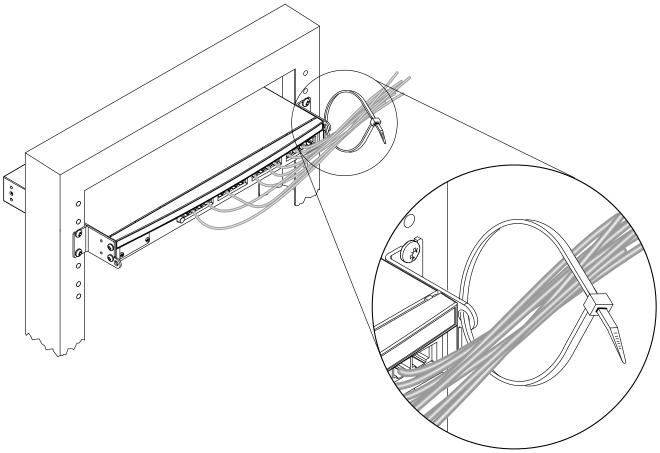
Connecting Devices to the Hub

To connect a device to the hub, push the RJ-45 plug into the RJ-45 jack until the tab on the plug clicks into place.



Cable management

The Hub-16U has been designed to help you with the problem of managing your network cables. Each mounting bracket has a loop hole for attaching an included cable tie to bundle the twisted-pair cables away from the hub.



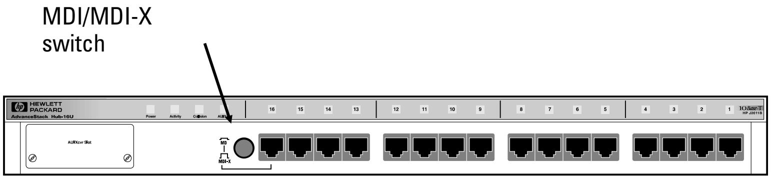
Connecting Hubs Together

Twisted-Pair Cascade Connections

To expand your network, the hub can be connected to other hubs by using the Media Dependent Interface (MDI) switch.

The MDI/MDI-X switch controls how the signals are sent through the twisted-pair cable connected to Port 16. The hub is shipped with the switch in the MDI-X position. The switch is a push/push switch with two positions:

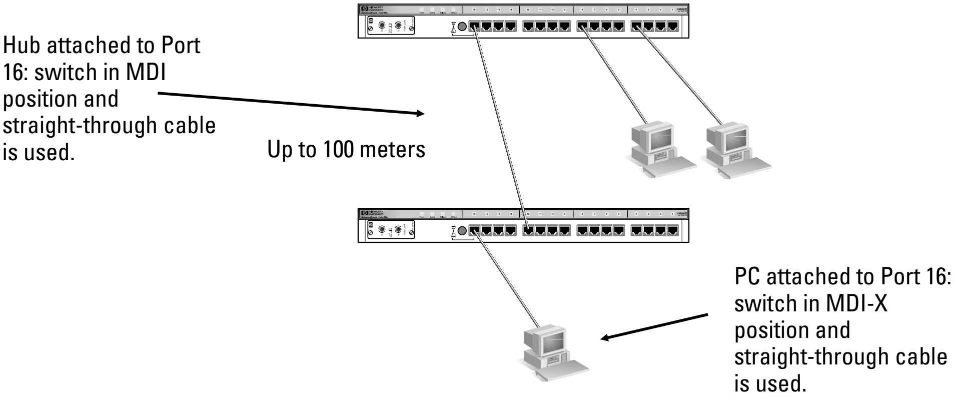
- **In the MDI position**, use Port 16 to connect your hub to another hub. In this position, the hub reverses the Tx and Rx port pairs for you. This allows you to use "straight-through" cable rather than "cross-over" cable to connect two hubs together. The cable can be up to 100 meters in length. In the MDI position, the switch is exposed by 0.06 inches (1.5 mm) in front of the bezel.
- **In the MDI-X position**, use Port 16 to connect your hub to a PC or similar device using "straight-through" cable. In the MDI-X position, the switch is exposed by 0.2 inches (5 mm) in front of the bezel.


MDI/MDI-X switch

Caution

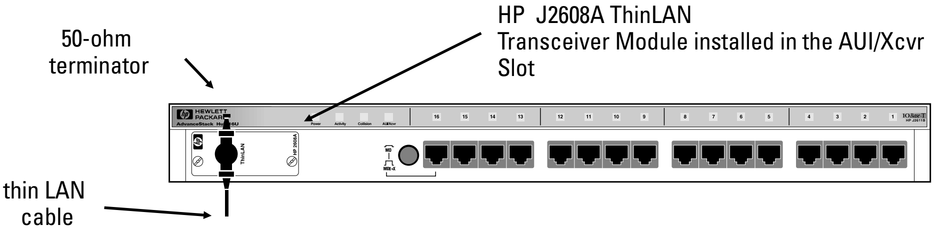
You must disconnect the device connected to Port 16 before changing the position of this switch. If you push the MDI/MDI-X switch and change its position while your network is running, the hub or PC connected to Port 16 will be disrupted. To restore your network, push the MDI/MDI-X switch in again.

In the following illustration, the first hub is connected to two end nodes and to a second hub.

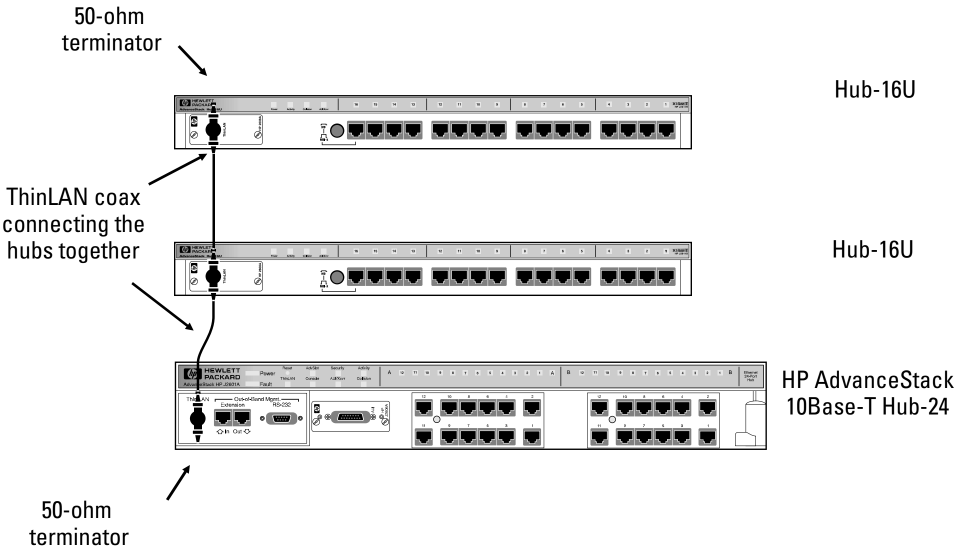

Hub attached to Port 16: switch in MDI position and straight-through cable is used.
Up to 100 meters
PC attached to Port 16: switch in MDI-X position and straight-through cable is used.

ThinLAN Connections

With an HP ThinLAN Transceiver Module for 10Base2 networks, you can connect your hub or a stack of hubs to a thin LAN network. The following illustration shows a hub with an HP ThinLAN Transceiver Module.



You can connect up to 30 hubs together on a common ThinLAN segment. The ThinLAN segment can include a computer attached to a hub at one end of the segment that can communicate with a computer attached to another hub at the other end of the segment. By using the BNC port on the module, the maximum repeater hop-count increment through the entire segment is only two. The following illustration shows you how to connect three hubs together from one ThinLAN port to another.


50-ohm terminator
Hub-16U
ThinLAN coax connecting the hubs together
Hub-16U
HP AdvanceStack 10Base-T Hub-24
50-ohm terminator

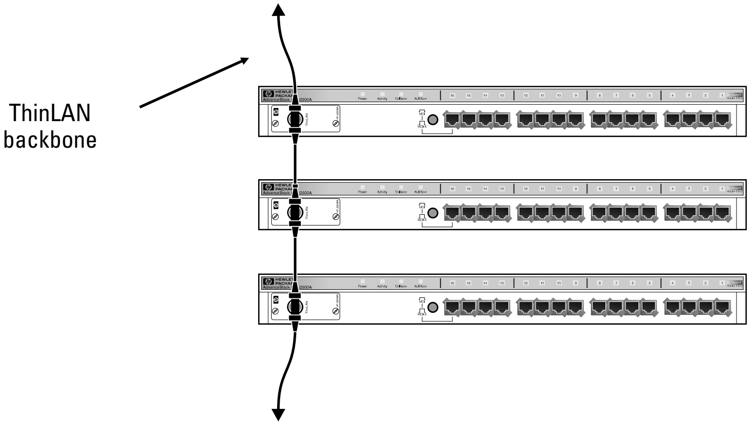
Note Each ThinLAN cable segment must be terminated using a 50-ohm terminator at each end. In the illustration above, a 50-ohm terminator is placed at each end of the cable segment.

Connecting Hubs to Network Backbones

Connecting the Hub-16U to a ThinLAN Backbone

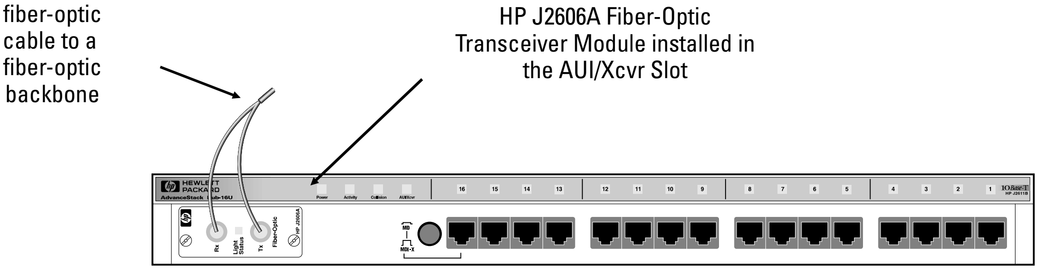
The optional ThinLAN Transceiver Module has a BNC 10Base2 port that can be used to connect your hub to a ThinLAN backbone.

The following illustration shows a hub with an HP ThinLAN Transceiver Module connected to a thin LAN backbone.



Connecting the Hub-16U to a Fiber-Optic Backbone

With an HP Fiber-Optic Transceiver Module for 10Base-FL networks, you can connect your hub to a fiber-optic backbone. The following illustration shows a hub with an HP Fiber-Optic Transceiver Module connected to a fiber-optic backbone:



For more information about cabling configuration, see the documentation accompanying the optional transceiver modules.

See the *Designing HP AdvanceStack Workgroup Networks* guide for information on valid network topologies.

2

- Troubleshooting Approaches
- Diagnosing with the LEDs
- Installation Problems
- Cabling Problems
- Unusual Network Activity
- Diagnostic Tests
- Replacement Instructions
- Customer Support Services

Troubleshooting

This chapter describes how to diagnose and resolve operating problems with your hub.

Additionally, if you have a HP AdvanceStack 8U/16U SNMP Module installed, you can use ASCII console software for certain diagnostic functions to troubleshoot the hub.

Troubleshooting Approaches

There are three primary ways to diagnose hub problems:

- By checking the LEDs on the front of the hub as described in “Diagnosing with the LEDs” later in this chapter.
- By visually inspecting the unit and all its connections as described in the “Installation Problems” and “Cabling Problems” sections later in this chapter.
- By using the ASCII console’s diagnostic functions as described in the documentation shipped with the HP AdvanceStack 8U/16U SNMP Module or HP Interconnect Manager, and in the software’s online help system.

Diagnosing with the LEDs

Most problems with the hub can be diagnosed using the LEDs on its front panel. This section describes the normal LED pattern during self-test, and LED patterns that indicate error conditions on the hub.

LED Pattern During Self-Test

Whenever the hub is powered on or reset, it performs a self-diagnostic test. During the self-test, all of the hub LEDs turn on for approximately three seconds.

If an HP Transceiver module is properly installed, the AUI/Xcvr LED stays lit. If an HP Transceiver module is not installed, the AUI/Xcvr LED turns off.

When the self-test completes successfully, the LEDs go into their normal operational states. If a hub hardware fault exists, the hub will not complete self-test. This will be indicated by an abnormal LED pattern.

The display of the Port LEDs depends on whether the HP AdvanceStack 8U/16U SNMP Module is installed. If you have an HP AdvanceStack 8U/16U SNMP Module installed, see the manual provided with the module for LED information.

The tables on the following two pages list the hub's LEDs, their possible states, and diagnostic tips to resolve any error conditions. These tables assume an HP AdvanceStack 8U/16U SNMP Module is *not* installed.

LED Error Indications

LED patterns indicating problems				**Diagnostic Tips**
Power	**Collision**	**AUI/Xcvr Port**	**Twisted-Pair Port**	
OFF	*	*	*	Verify that the power cord is plugged into an active power source and to the hub. Make sure these connections are snug. Try power cycling the hub by unplugging and plugging the hub back in. If the Power LED is still not on, verify the ac source works by plugging another device into the outlet. Or try plugging the hub into a different outlet or try a different power cord. If this condition persists, call your HP-authorized LAN dealer or HP representative for assistance.
ON	*	*	**OFF**	Check cabling on the indicated port all the way out to the device attached to that port. Faulty wiring or a bad connection could exist somewhere in that connection. The end node or hub attached to the port is off. If you have an HP AdvanceStack 8U/16U SNMP Module installed, see the module manual. If Port 16, check the position of the MDI/MDI-X switch. For hub-to-hub connections, set the switch to MDI. For hub-to-PC connections, set the switch to MDI-X.
ON	*	**OFF**	*	Verify that the HP Transceiver Module is firmly inserted into the AUI/Xcvr slot into the front of the hub. See the documentation accompanying the HP Transceiver Module for more troubleshooting information.
ON	*	*	**Flashing intermittently**	Check cabling on indicated port. If you have an HP AdvanceStack 8U/16U SNMP Module installed, see the HP AdvanceStack 8U/16U SNMP Module manual.

***This LED is not important for the diagnosis.**

LED patterns indicating problems				**Diagnostic Tips**
Power	**Collision**	**AUI/Xcvr Port**	**Twisted-Pair Port**	
ON	**Appears solidly ON**	*	*	Very frequent collisions are occurring, which could indicate a network fault or improperly terminated cable. A transceiver attached to the AUI port may not have the SQE test disabled. For information about the SQE test, see your documentation accompanying your transceiver module. If you have an HP AdvanceStack 8U/16U SNMP Module installed, see its manual.
ON	*	*	**Slow Flash**	The port has been auto-partitioned because of an excessive collision condition. Check cable connections and status of attached network devices for causes of the excess collisions.
ON	*	**Slow Flash**	*	The transceiver port has been auto-partitioned because of too many collisions. Check cable terminations, connections, SQE setting on any external transceivers, and status of attached network devices for causes of the excess collisions.
ON	*	*	**After self-test, all ports are ON for an extended period of time.**	The hub has failed its self-test. Power-cycle the hub. If this condition persists, call your HP-authorized LAN dealer or HP representative for assistance.

*** This LED is not important for the diagnosis.**

Installation Problems

By carefully following the installation procedures described in chapter 1, “Installing the Hub”, you can avoid most problems caused by improper installation of the hub or one of its components.

Incorrect Hardware Installation

Incorrectly installing the hub, power cord, the HP AdvanceStack 8U/16U SNMP module, or a transceiver module can result in one or all of these components malfunctioning or not functioning at all. If one or all of these components appear to not be functioning, re-check the installation procedure and, if necessary, re-install the component correctly.

Cabling Problems

A high percentage of network problems are due to faulty cabling. Cabling problems usually result in the failure of a hub to connect to a network, another hub, or the end nodes.

Connections

All cables attached to the hub should be checked to see that they are properly connected. Proper network connections are described in chapter 1, “Installing the Hub”.

Properly connecting cables to the transceiver modules is described in the documentation that accompanies those modules.

If you are using the optional HP ThinLAN Transceiver Module, be certain the thin coax segment attached to the port is properly terminated with a 50-ohm terminator at both ends, as described in the manual accompanying the transceiver module.

Non-standard Cables

Mis-wired cables may cause numerous network collisions, and can seriously impair network performance. Before connecting cables into your network, you should verify that they comply with the applicable standards. For a list of compatible cables and a description of the pinouts for each port on the hub (which can be used to confirm the compatibility of unlisted cables), see appendix A, “Cables and Connectors”.

Topology

It is important to make sure you have a valid network topology. Common topology faults include excessive cable length and excessive repeater delays between nodes. If you have trouble after recent changes to a network, switch back to the previous topology. If you no longer have any trouble, the new topology is probably at fault. Refer to the guide entitled *Designing HP AdvanceStack Workgroup Networks* for topology configuration guidelines. Contact your HP-authorized LAN dealer or local HP sales office to get a copy of this guide.

Unusual Network Activity

Network activity that exceeds accepted norms often indicates a hardware problem with one or more of the network components, possibly including the hub. Unusual network activity is usually indicated by the LEDs on the front of the hub or measured with one of the diagnostic tools in the ASCII console software. Refer to “Diagnosing with LEDs” earlier in this chapter for information on using LEDs to identify unusual network activity.

Diagnostic Tests

If you have an HP AdvanceStack 8U/16U SNMP module installed into the hub, the ASCII console software or HP Interconnect Manager provides tests and indicators that can be used to monitor the hub and its network connections. See the documentation shipped with the HP AdvanceStack 8U/16U SNMP module and the software's online Help system for more details about these tests and indicators.

Testing the Hub Only

If you believe that the hub is not operating correctly, you can test the hub's circuitry by resetting the hub through one of these procedures:

- Unplug the power cord from the hub and plug the power cord into the hub again.
- If an HP AdvanceStack 8U/16U SNMP module is installed, select the "Reset" option from the ASCII console.

Each of these procedures will power-cycle the hub and execute its self-test. If all of the Port LEDs stay on after 3 seconds, the hub may have failed its self-test. See "Diagnosing with the LEDs" earlier in this chapter to interpret the LED display.

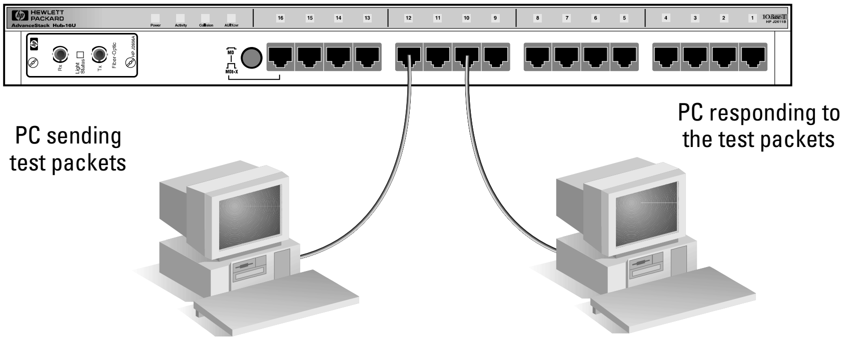
Caution Cycling power on the hub will temporarily disable the network and could have other adverse effects.

Testing Twisted-Pair Cabling

The twisted-pair cable attached to the hub must be compatible with the IEEE 802.3 Type 10Base-T standard. To verify that your cable is compatible with this standard, you can use the HP J2263A Cable Test Set. The older HP 28687A Wire Test Instrument can also be used. HP also offers a wire testing service. Contact your HP-authorized LAN dealer or your local HP sales office for more information.

Testing End-to-End Network Communications

Both the hub and the cabling can be tested by running an end-to-end communications test — a test that sends known data from one network device to another through the hub — such that you can verify that the data was correctly transmitted between the devices. For example, if you have two PCs on the network that have HP LAN adapter cards, you can use the “Link Test” option from the card’s test program to verify the entire communication path between the two PCs. In the following illustration, two computers are connected together with twisted-pair cable to two different ports on the hub.



See your LAN adapter card’s manual for information on running an end-to-end communication test.

Replacement Instructions

Remove any of the optional modules that you have installed into your hub before returning it to Hewlett-Packard. Keep the optional modules to install them into the replacement hub.

The modules can be damaged easily by small amounts of static electricity. Observe these precautions when removing and installing the modules:

- When handling the module, first touch a grounded metal surface, or wear an anti-static wrist strap that is attached to grounded metal.
- To prevent generating static electricity, minimize your movement around the work area, or work in an anti-static work area.
- Handle the module carefully at all times. Avoid flexing it or touching its components.

The faulty hub should be returned to Hewlett-Packard with the AUI/Xcvr and management slots empty and the cover plates installed.

For information about how to remove the modules, see the manuals accompanying the HP Transceiver Module and the HP AdvanceStack 8U/16U SNMP Module.

Customer Support Services

Hewlett-Packard offers support 24 hours a day, seven days a week through the use of automated electronic services including:

- Hewlett-Packard BBS and World Wide Web
- Hewlett-Packard FTP Library Service on the Internet
- CompuServe
- HP FIRST FAX Retrieval Service

SNMP firmware for the AdvanceStack 8U/16U SNMP module (`J3133a.exe`) is available through the HP BBS, World Wide Web, CompuServe, and the HP FTP Library Service. After you download the file(s) from one of these sources, you type *filename* `/x`. For example, `icmupdt /x`

HP BBS and World Wide Web

The HP BBS phone number is (208) 344-1691 in the USA. Set your modem communication settings to:

- parity = N
- data bits = 8
- stop bits = 1
- baud rates = 300, 1200, 2400, 4800, 9600, or 14400

From the BBS, you can download files and learn about HP networking products. After you download the file, extract the file (e.g., `j3133a /x`).

The URL address for the World Wide Web is:

http://www.hp.com/go/network_city

From this web site, you can download files and learn about HP networking products. After you download the file, extract the file (e.g., `j3133a /x`).

Hewlett-Packard FTP Library Service

To access the HP FTP Library, follow these steps:

1. Enter the command:

   ```
   ftp ftp-boi.external.hp.com
   ```

   The ftp> prompt appears.

2. At the ftp > prompt, enter:

   ```
   anonymous
   ```

3. At the password prompt, enter your internet e-mail address.

4. Change directories:

   ```
   cd /pub/networking/software
   ```

5. At the ftp > prompt, set the transfer type to binary:

   ```
   bin
   ```

6. List the contents of the directory:

   ```
   dir
   ```

7. Retrieve the file by entering:

   `get` *filename* (e.g., `get j3133a.exe`)

8. Quit the FTP session by entering:

   ```
   quit
   ```

9. Extract the file (e.g., `j3133a /x`)

CompuServe

CompuServe is an electronic information and communication service run by an independent company. The service is typically accessed with a computer and modem and uses standard voice telephone lines for transmitting and receiving data. CompuServe is available 24 hours-a-day, seven days per week. The participants pay a monthly fee for this service. To get the latest agent firmware from CompuServe, follow these steps:

1. Login to CompuServe.
2. Type: `go hpsys`
3. Type: `lib 7`
4. Type: `download` *`filename`* (e.g., `download j3133a.exe`)
5. Log off CompuServe.
6. Extract the file (e.g., `j3133a /x`)

HP FIRST Fax Retrieval Service

HP FIRST is an automated fax retrieval service that is available 24 hours a day, seven days a week. HP FIRST provides information on the following topics:

- Product information
- Troubleshooting instructions
- Technical reviews and articles
- Configuration information

To access HP FIRST, dial one of the following phone numbers:

Location	Phone Number
U.S. and Canada Only	Dial 1-(800) 333-1917 with your fax machine or touch-tone phone and press 1.
Outside the U.S. and Canada	Dial 1-(208) 344-4809 from your fax machine and press 9.

To receive a list of currently available documents, enter document number 19941. The information you requested will be sent to you by return fax.

HP Network Phone-In Support (NPS)

Call your HP Authorized Dealer or the nearest HP Sales and Support Office. In addition, the HP Network Phone-In Support (NPS) service provides expert technical assistance for U.S.A. customers through an NPS contract or at an hourly rate (1-800-790-5544) Monday through Friday, 5 am to 6 pm, PST.

3

- Front of the Hub
- Back of the Hub
- Hub Operation

Hub Reference

Front of the Hub

Hub status LEDs

The hub status LEDs indicate whether the hub is functioning properly. For further details on error conditions indicated by the Status LEDs, see chapter 2, “Troubleshooting”.

LED	State	Meaning of LED
Power (green)	On	The hub is receiving power.
	Off	The hub is not receiving power.
Activity (green)	Flickering	ON while a packet is being transmitted. Normally, the LED appears to flicker. In heavy traffic, it may appear on all the time.
Collision (orange)	Flickering	This LED is on while a collision is detected on any of the attached cable segments. If collisions are infrequent (which is normal) the light may be imperceptible. In a network with heavy traffic, the LED will glow and flicker dimly, indicating collisions are occurring. If it appears on continuously (with no flicker), it is a possible indicator of a network fault. See chapter 2, “Troubleshooting”.

Port status LEDs

The following table provides LED port information. If an HP AdvanceStack 8U/16U SNMP module is installed, additional LED states may be observed. For information about the hub LEDs when an HP AdvanceStack 8U/16U SNMP Module is installed, see the manual accompanying the module.

LED	State	Meaning of LED
AUI/Xcvr Port (green)	On	An optional HP Transceiver Module is properly installed in the hub's front panel slot.
	Off	An HP Transceiver Module is not installed.
	Slow Flash*	The HP Transceiver Module port has auto-partitioned. See "Auto-Partitioning" later in this chapter.
Twisted-pair Port (green)	On	Link beat is detected from the attached node.
	Off	The port is not receiving the link beat signal from the attached node.
	Slow Flash*	The port has been auto-partitioned. See "Auto-Partitioning" later in this chapter.

* The slow flash is approximately once every 1.5 seconds.

AUI/Xcvr Slot

The AUI/Xcvr Slot is used to add an HP Transceiver Module. For more information, see the "Install Add-in Modules" section in chapter 1.

Back of the hub

The management slot is used to add an HP AdvanceStack 8U/16U SNMP Module. For more information, see the "Install Add-in Modules" section in chapter 1.

Hub Operation

The HP AdvanceStack Hub-16U is a multiport repeater that conforms to the IEEE 802.3 repeater specification. Data signals coming into the hub from any of its ports are automatically regenerated and transmitted to all the other hub network ports. The hub regenerates the data without interpreting the contents, so it can be used in either IEEE 802.3 or Ethernet networks and with any upper-level protocol.

Collision Detection

The hub also performs collision detection. A collision occurs when two nodes try to transmit at the same time. When the hub detects a collision, it stops repeating the colliding transmissions and starts transmitting a jamming signal. The jamming signal tells the transmitting nodes that a collision has occurred. The colliding nodes then stop transmitting for a random amount of time before attempting to retransmit the data. Once the collision condition is removed, the hub stops transmitting the jamming signal and normal operation is resumed.

Auto-Partitioning

The hub will automatically partition (temporarily disable) one of its ports if a collision condition exists for an excessive duration (between 1024 and 2048 bit times) or occurs during each of 32 consecutive attempts to transmit. The hub monitors the partitioned port and automatically re-enables the port when a minimum length packet can be successfully transmitted or received without a collision occurring.

Excessive collisions may be caused by faulty wiring. If a port's transmit (Tx +/-) wires have been shorted to the receive (Rx +/-) wires of any port, a collision will be detected when that port attempts to transmit. If a port's receive (Rx +/-) wires are not connected properly, collisions may occur because the hub cannot detect the presence of network traffic on that port and may thus transmit at inappropriate times.

A port may occasionally also become partitioned when network traffic is extremely heavy causing an abnormally high collision rate.

Link Beat

Type 10Base-T devices use a signal called link beat (also called link test pulse). This signal informs the hub of the presence of a device connected to it over twisted-pair cable and of the integrity of the twisted-pair link between them. The hub will not transmit packets out of twisted-pair ports that do not sense the link beat signal.

A

- Recommended Cables
- Twisted-Pair Cable/Connector Pin-Outs
- ThinLAN Requirements

Cables and Connectors

This appendix lists cables that have been tested and verified for use with the HP AdvanceStack Hub-16U. It also includes minimum pin-out information so, if you wish to use an unlisted cable, you can verify that the cables used in your installation are correctly wired. Note that each pin-out does not necessarily match the pin-out for the corresponding HP cable, but cables manufactured to follow the minimum pin-out will function correctly.

Incorrectly wired cabling is the most common cause of problems for LAN communications. HP recommends that you work with a qualified LAN cable installer for assistance with your cabling requirements.

Recommended Cables

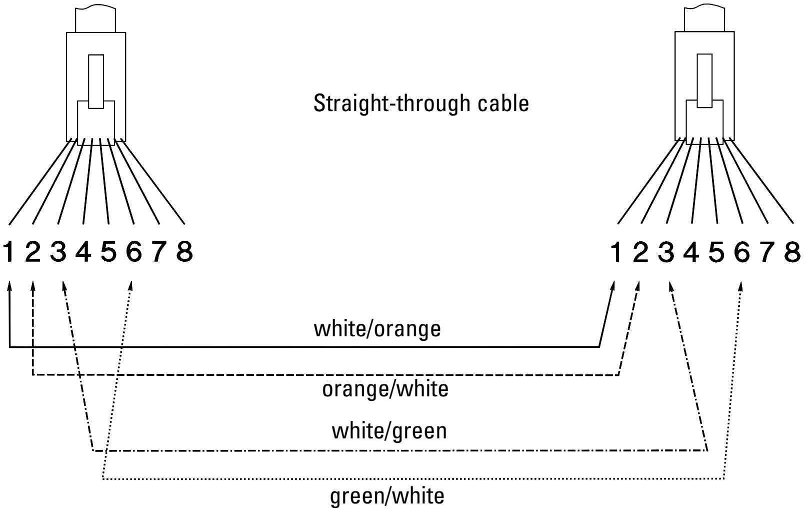
Cable Function	Cable Type	HP Product Number
Network connections to the hub:		
Hub to end node connection or hub to hub connection using the MDI/MDI-X switch	Twisted-pair "straight-through" cable	92268A (4 pair, 4 meters) 92268B (4 pair, 8 meters) 92268C (4 pair, 16 meters) 92268D (4 pair, 32 meters) 92268N (4 pair, 300 meters)*
* The maximum total length of any twisted-pair segment is 100 meters.		

You can contact your HP authorized dealer or call HP at 1-800-538-8787 to order these parts.

Twisted-Pair Cable/Connector Pin-Outs

Twisted-Pair Cable for Hub-to-Computer Network Connection

To connect PCs or other network devices to the hub, use a "straight-through" 10Base-T cable. The twisted-pair wires must be twisted through the entire length of the cable. The wiring sequence must conform to AT&T 258A (not USOC). See "Twisted-Pair Cable Pin Assignments" later in this chapter for a listing of the signals used on each pin.



Note

Pins 1 and 2 *must* be a twisted pair.
Pins 3 and 6 *must* be a twisted pair.

Pins 4, 5, 7, and 8 are not used in this application, although they may be wired in the cable.

Twisted-Pair Cable Pin Assignments

Twisted-Pair Straight-Through Cable

Hub End			Computer or Transceiver End	
Signal	**Pins**		**Pins**	**Signal**
(receive +)	1	←	1	(transmit +)
(receive –)	2	←	2	(transmit –)
(transmit +)	3	→	3	(receive +)
(transmit –)	6	→	6	(receive –)

ThinLAN Cable Requirements

If you add an HP J2608A ThinLAN Transceiver Module, the thin coaxial cables used with the module must comply with the IEEE 802.3 Type 10Base2 requirements. Some RG-58 A/U or RG-58 C/U cables meet these requirements.

The maximum length of a single thin coaxial cable segment is 185 meters. The minimum length (for example, to connect adjacent hubs in a rack) is 0.5 meter.

B

- Physical
- Electrical
- Environmental
- Connectors
- Electromagnetic

Specifications

Physical

Width:	42.5 cm (16.8 in)	**Height:**	4.36 cm (1.7 in)
Depth:	23.8 cm (9.4 in)	**Weight:**	2.2 kg (4.8 lb)

Electrical

ac voltage:	100 - 127 volts	200-240 volts
Maximum current:	0.3A max	0.2A max
Frequency range:	50/60 Hz	50/60 Hz

Environmental

	Operating	**Non-Operating**
Temperature:	0°C to 55°C (32°F to 131°F)	-40°C to 70°C (-40°F to 158°F)
Relative humidity: (non-condensing)	15% to 95% at 40°C (104°F)	15% to 90% at 65°C (149°F)
Maximum altitude:	4.6 km (15,000 ft)	4.6 km (15,000 ft)

Connectors

- The RJ-45 twisted-pair ports are compatible with the IEEE 802.3 Type 10Base-T standard.

Electromagnetic

Emissions

FCC part 15 Class A
EN 55022 Class A / CISPR-22 Class A
VCCI Level I
Complies with Canadian EMC Class A requirements

Immunity

See the Declaration of Conformity for details at the end of the Regulatory Statements in this guide.

Safety

IEC950/EN6095D
UL1950
CSA950
NOM-019-SCFI-1993

Safety and Regulatory Statements

Safety Information

Safety Symbols

⚠	Documentation reference symbol. If the product is marked with this symbol, refer to the product documentation to get more information about the product.
WARNING	A WARNING in the manual denotes a hazard that can cause injury or death.
CAUTION	A CAUTION in the manual denotes a hazard that can damage equipment.

Do not proceed beyond a WARNING or CAUTION notice until you have understood the hazardous conditions and have taken appropriate steps.

Grounding

These are safety class I products and have protective earthing terminals. There must be an uninterruptible safety earth ground from the main power source to the product's input wiring terminals, power cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, disconnect the power cord until the ground has been restored.

For LAN cable grounding:

- If your LAN covers an area served by more than one power distribution system, be sure their safety grounds are securely interconnected.
- LAN cables may occasionally be subject to hazardous transient voltages (such as lightning or disturbances in the electrical utilities power grid). Handle exposed metal components of the network with caution.

Servicing

There are no user-serviceable parts inside these products. Any servicing, adjustment, maintenance, or repair must be performed only by service-trained personnel.

These products do not have a power switch; they are powered on when the power cord is plugged in.

Informations concernant la sécurité

Symboles de sécurité

⚠	Symbole de référence à la documentation. Si le produit est marqué de ce symbole, reportez-vous à la documentation du produit afin d’obtenir des informations plus détaillées.
WARNING	Dans la documentation, un WARNING indique un danger susceptible d’entraîner des dommages corporels ou la mort.
CAUTION	Un texte de mise en garde intitulé CAUTION indique un danger susceptible de causer des dommages à l’équipement.
	Ne continuez pas au-delà d’une rubrique WARNING ou CAUTION avant d’avoir bien compris les conditions présentant un danger et pris les mesures appropriées.

Cet appareil est un produit de classe I et possède une borne de mise à la terre. La source d’alimentation principale doit être munie d’une prise de terre de sécurité installée aux bornes du câblage d’entrée, sur le cordon d’alimentation ou le cordon de raccordement fourni avec le produit. Lorsque cette protection semble avoir été endommagée, débrancher le cordon d’alimentation jusqu’à ce que la mise à la terre ait été réparée.

Mise à la terre du câble de réseau local:

- si votre réseau local s’étend sur une zone desservie par plus d’un système de distribution de puissance, assurez-vous que les prises de terre de sécurité soient convenablement interconnectées.
- Les câbles de réseaux locaux peuvent occasionnellement être soumis à des surtensions transitoires dangereuses (telles que la foudre ou des perturbations dans le réseau d’alimentation public). Manipulez les composants métalliques du réseau avec précautions.

Aucune pièce contenue à l’intérieur de ce produit ne peut être réparée par l’utilisateur. Tout dépannage, réglage, entretien ou réparation devra être confié exclusivement à un personnel qualifié.

Cet appareil ne comporte pas de commutateur principal ; la mise sous tension est effectuée par branchement du cordon d’alimentation.

Hinweise zur Sicherheit

Sicherheitssymbole

⚠	Symbol für Dokumentationsverweis. Wenn das Produkt mit diesem Symbol markiert ist, schlagen Sie bitte in der Produktdokumentation nach, um mehr Informationen über das Produkt zu erhalten.
WARNING	Eine WARNING in der Dokumentation symbolisiert eine Gefahr, die Verletzungen oder sogar Todesfälle verursachen kann.
CAUTION	CAUTION in der Dokumentation symbolisiert eine Gefahr, die das Gerät beschädigen kann.

Fahren Sie nach dem Hinweis WARNING oder CAUTION erst fort, nachdem Sie den Gefahrenzustand verstanden und die entsprechenden Maßnahmen ergriffen haben.

Dies ist ein Gerät der Sicherheitsklasse I und verfügt über einen schützenden Erdungsterminal. Der Betrieb des Geräts erfordert eine ununterbrochene Sicherheitserdung von der Hauptstromquelle zu den Geräteingabeterminals, den Netzkabeln oder dem mit Strom belieferten Netzkabelsatz voraus. Sobald Grund zur Annahme besteht, daß der Schutz beeinträchtigt worden ist, das Netzkabel aus der Wandsteckdose herausziehen, bis die Erdung wiederhergestellt ist.

Für LAN-Kabelerdung:

- Wenn Ihr LAN ein Gebiet umfaßt, das von mehr als einem Stromverteilungssystem beliefert wird, müssen Sie sich vergewissern, daß die Sicherheitserdungen fest untereinander verbunden sind.
- LAN-Kabel können gelegentlich gefährlichen Übergangsspannungen ausgesetzt werden (beispielsweise durch Blitz oder Störungen in dem Starkstromnetz des Elektrizitätswerks). Bei der Handhabung exponierter Metallbestandteile des Netzwerkes Vorsicht walten lassen.

Dieses Gerät enthält innen keine durch den Benutzer zu wartenden Teile. Wartungs-, Anpassungs-, Instandhaltungs- oder Reparaturarbeiten dürfen nur von geschultem Bedienungspersonal durchgeführt werden.

Dieses Gerät hat keinen Netzschalter; es wird beim Anschließen des Netzkabels eingeschaltet.

Considerazioni sulla sicurezza

Simboli di sicurezza

⚠	Simbolo di riferimento alla documentazione. Se il prodotto è contrassegnato da questo simbolo, fare riferimento alla documentazione sul prodotto per ulteriori informazioni su di esso.
WARNING	La dicitura WARNING denota un pericolo che può causare lesioni o morte.
CAUTION	La dicitura CAUTION denota un pericolo che può danneggiare le attrezzature.
	Non procedere oltre un avviso di WARNING o di CAUTION prima di aver compreso le condizioni di rischio e aver provveduto alle misure del caso.

Questo prodotto è omologato nella classe di sicurezza I ed ha un terminale protettivo di collegamento a terra. Dev'essere installato un collegamento a terra di sicurezza, non interrompibile che vada dalla fonte d'alimentazione principale ai terminali d'entrata, al cavo d'alimentazione oppure al set cavo d'alimentazione fornito con il prodotto. Ogniqualvolta vi sia probabilità di danneggiamento della protezione, disinserite il cavo d'alimentazione fino a quando il collegamento a terra non sia stato ripristinato.

Per la messa a terra dei cavi LAN:

- se la vostra LAN copre un'area servita da più di un sistema di distribuzione elettrica, accertatevi che i collegamenti a terra di sicurezza siano ben collegati fra loro;
- i cavi LAN possono occasionalmente andare soggetti a pericolose tensioni transitorie (ad esempio, provocate da lampi o disturbi nella griglia d'alimentazione della società elettrica); siate cauti nel toccare parti esposte in metallo della rete.

Nessun componente di questo prodotto può essere riparato dall'utente. Qualsiasi lavoro di riparazione, messa a punto, manutenzione o assistenza va effettuato esclusivamente da personale specializzato.

Questo apparato non possiede un commutatore principale; si mette scotto tensione all'inserirsi il cavo d'alimentazione.

Consideraciones sobre seguridad

Símbolos de seguridad

⚠	Símbolo de referencia a la documentación. Si el producto va marcado con este símbolo, consultar la documentación del producto a fin de obtener mayor información sobre el producto.
WARNING	Una WARNING en la documentación señala un riesgo que podría resultar en lesiones o la muerte.
CAUTION	Una CAUTION en la documentación señala un riesgo que podría resultar en averías al equipo.
	No proseguir después de un símbolo de WARNING o CAUTION hasta no haber entendido las condiciones peligrosas y haber tomado las medidas apropiadas.

Este aparato se enmarca dentro de la clase I de seguridad y se encuentra protegido por una borna de puesta a tierra. Es preciso que exista una puesta a tierra continua desde la toma de alimentación eléctrica hasta las bornas de los cables de entrada del aparato, el cable de alimentación o el juego de cable de alimentación suministrado. Si existe la probabilidad de que la protección a tierra haya sufrido desperfectos, desenchufar el cable de alimentación hasta haberse subsanado el problema.

Puesta a tierra del cable de la red local (LAN):

- Si la LAN abarca un área cuyo suministro eléctrico proviene de más de una red de distribución de electricidad, cerciorarse de que las puestas a tierra estén conectadas entre sí de modo seguro.
- Es posible que los cables de la LAN se vean sometidos de vez en cuando a voltajes momentáneos que entrañen peligro (rayos o alteraciones en la red de energía eléctrica). Manejar con precaución los componentes de metal de la LAN que estén al descubierto.

Este aparato no contiene pieza alguna susceptible de reparación por parte del usuario. Todas las reparaciones, ajustes o servicio de mantenimiento debe realizarlos solamente el técnico.

Este producto no tiene interruptor de potencia; se activa cuando se enchufa el cable de alimentación.

Safety Information

安全性の考慮

安全記号

⚠	マニュアル参照記号。製品にこの記号がついている場合はマニュアルを参照し、注意事項等をご確認ください。
警告	マニュアル中の「警告」は人身事故の原因となる危険を示します。
注意	マニュアル中の「注意」は装置破損の原因となる危険を示します。

「警告」や「注意」の項は飛ばさないで必ずお読みください。危険性に関する記載事項をよく読み、正しい手順に従った上で次の事項に進んでください。

これは安全性クラスIの製品で保護用接地端子を備えています。主電源から製品の入力配線端子、電源コード、または添付の電源コード・セットまでの間、切れ目のない安全接地が存在することが必要です。もしこの保護回路が損なわれたことが推測されるときは、接地が修復されるまで電源コードを外しておいてください。

LAN ケーブルの接地に関して:

- もし貴社のLANが複数の配電システムにより電力を受けている領域をカバーしている場合には、それらのシステムの安全接地が確実に相互に結合されていることを確認してください。
- LAN ケーブルは時として危険な過度電圧(例えば雷や、配電設備の電力網での障害)にさらされることがあります。露出した金属部分の取扱には十分な注意をはらってください。

本製品の内部にはユーザーが修理できる部品はありません。サービス、調整、保守および修理はサービス訓練を受けた専門家におまかせください。

本製品には電源スイッチがありません。電源コードを接続したとき電源入となります。

Regulatory Statements

FCC Statement (For U.S.A. Only)
Federal Communications Commission Radio Frequency Interference Statement

Warning: This equipment generates, uses, and can radiate radio frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

If this equipment causes interference to radio reception (which can be determined by unplugging the power cord from the equipment) try these measures: Re-orient the receiving antenna. Relocate the equipment with respect to the receiver. Plug the equipment and receiver into different branch circuits. Consult your dealer or an experienced technician for additional suggestions.

VCCI Class 1 (For Japan Only)

この装置は，第一種情報装置（商工業地域において使用されるべき情報装置）で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）基準に適合しております。

従って，住宅地域またはその隣接した地域で使用すると，ラジオ，テレビジョン受信機等に受信障害を与えることがあります。

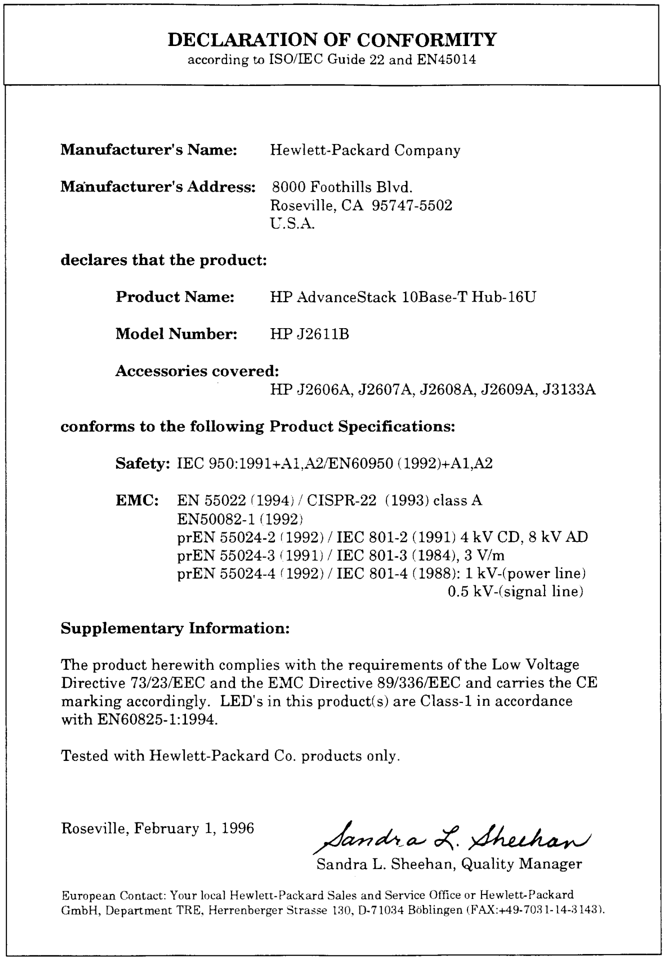
取扱説明書に従って正しい取り扱いをして下さい。

Note

This is a class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Declaration of Conformity

The following Declaration of Conformity for the HP AdvanceStack Hub-16U complies with ISO/IEC Guide 22 and EN 45014. The declaration identifies the product, the manufacturer's name and address, and the applicable specifications that are recognized in the European community.



DECLARATION OF CONFORMITY
according to ISO/IEC Guide 22 and EN45014

Manufacturer's Name: Hewlett-Packard Company

Manufacturer's Address: 8000 Foothills Blvd.
Roseville, CA 95747-5502
U.S.A.

declares that the product:

Product Name: HP AdvanceStack 10Base-T Hub-16U

Model Number: HP J2611B

Accessories covered:
HP J2606A, J2607A, J2608A, J2609A, J3133A

conforms to the following Product Specifications:

Safety: IEC 950:1991+A1,A2/EN60950 (1992)+A1,A2

EMC: EN 55022 (1994) / CISPR-22 (1993) class A
EN50082-1 (1992)
prEN 55024-2 (1992) / IEC 801-2 (1991) 4 kV CD, 8 kV AD
prEN 55024-3 (1991) / IEC 801-3 (1984), 3 V/m
prEN 55024-4 (1992) / IEC 801-4 (1988): 1 kV-(power line)
0.5 kV-(signal line)

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC and carries the CE marking accordingly. LED's in this product(s) are Class-1 in accordance with EN60825-1:1994.

Tested with Hewlett-Packard Co. products only.

Roseville, February 1, 1996

Sandra L. Sheehan

Sandra L. Sheehan, Quality Manager

European Contact: Your local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department TRE, Herrenberger Strasse 130, D-71034 Böblingen (FAX:+49-7031-14-3143).

Index

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50-ohm terminator
  for a ThinLAN cable segment ... 1-15

A

Activity LED ... 3-2
AUI/Xcvr LED ... 3-3
auto-partitioning
  basic operation ... 3-5

B

back of the hub
  installing optional modules ... 1-3
BBS
  obtaining software from ... 2-11
bulletin board
  obtaining software from ... 2-11

C

cabinet mounting
  instructions for ... 1-9
cable management
  using ... 1-12
cable tie
  for cable management ... 1-12
cables
  bundling with a cable tie ... 1-12
  cabling problems ... 2-6
  network connections ... A-2
  twisted-pair connector pin-outs ... A-3
collision detection ... 3-4
Collision LED ... 3-2
CompuServe
  obtaining files from ... 2-13
connections
  hub to hub networking ... 1-13
  network ... 1-11
  out-of-band management ... 1-3
connector specifications ... B-2
countries
  power cords for ... 1-2
customer service
  types of ... 2-11

D

Declaration of Conformity ... C-9
diagnosing with the LEDs ... 2-3
diagnostic tests ... 2-7
  testing the hub only ... 2-8
  testing twisted-pair cabling ... 2-8

E

electrical specifications ... B-2
electromagnetic specifications ... B-2
environmental specifications ... B-2
Ethernet networks ... iii
external power supply ... 1-2

F

fax
  using to get HP product information ... 2-14
features, hub ... v
fiber-optic backbone ... 1-16
front of the hub
  status LEDs ... 3-2
ftp
  obtaining files from HP ... 2-12

H

hourly support
  calling for ... 2-14
HP AdvanceStack SNMP Module ... 1-3
  LED pattern during self-test ... 2-3
  part of hub installation ... 1-3
HP FIRST FAX Retrieval Service
  using ... 2-14
HP FTP Library Service
  using ... 2-12
HP transceiver modules ... 1-5
hub
  at a glance ... iii
  connecting to fiber-optic backbone ... 1-16
  connecting to network backbones ... 1-15
  connecting to ThinLAN backbone ... 1-15
  description ... iii
  features ... v
  installing ... 1-2
  mounting ... 1-8
  reference ... 3-2
  ThinLAN connections ... 1-14
  troubleshooting ... 2-2

hub operation
  auto-partitioning ... 3-5
  collision detection ... 3-4
  description ... 3-4
  link beat ... 3-5
  verifying ... 1-6
hub to hub network connections
  with the MDI switch ... 1-13

I

IEEE 802.3 Type 10Base-T standard ... iii
included parts ... 1-2
installation problems ... 2-6
installing the hub
  mounting procedures ... 1-8
  network connections ... 1-11
  out-of-band management connections ... 1-3
  summary of steps ... 1-2
  verifying hub operation ... 1-6
Internet
  obtaining latest drivers from ... 2-12
  obtaining software from ... 2-11

L

LAN adapter cards
  to test end-to-end communications ... 2-9
LEDs
  Activity ... 3-2
  AUI/Xcvr ... 3-3
  Collision ... 3-2
  diagnosing the hub status ... 2-3
  pattern during self test ... 2-3
  patterns showing error conditions ... 2-4
  Power ... 3-2
  twisted-pair ports ... 3-3
  verifying hub operation ... 1-7
link beat
  description ... 3-5
list
  included parts ... 1-2

M

managing the hub ... 1-3
MDI switch
  using ... 1-13
MDI-X switch
  using ... 1-13
mounting bracket
  for cable management ... 1-12
mounting the hub ... 1-8
  in a rack or cabinet ... 1-9
  precautions ... 1-8

N

network backbones ... 1-15
network connections
  hub to hub connections ... 1-13
  port connections ... 1-11

O

operation of the hub
  description ... 3-4
out-of-band management
  connecting to the hub ... 1-3

P

partitioning
  automatic partitioning of ports ... 3-5
parts list ... 1-2
physical specifications of hubs ... B-2
port LEDs
  twisted-pair ... 3-3
ports
  connection procedures ... 1-11
power
  LED pattern during ... 2-3
power cord
  plugging into the hub ... 1-6
  plugging into the wall ... 1-6
Power LED ... 3-2
precautions for mounting the hub ... 1-8
procedures
  hub installation ... 1-2
  network connections to the hub ... 1-11
  network port connections ... 1-11

R

rack mounting
  instructions for ... 1-9
recommended cables ... A-2
Regulatory statements ... C-8
replacement
  of the hub ... 2-10
resetting the hub
  troubleshooting procedure ... 2-8
RJ-45 jack ... 1-11

S

Safety information ... C-2
specifications
  connectors ... B-2
  electrical ... B-2
  electromagnetic ... B-2
  environmental ... B-2
  physical ... B-2
status LEDs
  description ... 3-2
summary
  installation steps ... 1-2

T

technical support
  types of ... 2-11
terminator
  for a thin LAN segment ... 1-15
testing twisted-pair cabling ... 2-8
ThinLAN backbone ... 1-15
ThinLAN connections ... 1-14
ThinLAN port
  and 50-ohm terminator ... 1-15
  cable requirements ... A-4
topology faults ... 2-7
transceiver modules ... 1-5
  part of hub installation ... 1-3
troubleshooting
  approaches ... 2-2
  cabling problems ... 2-6
  diagnosing with the LEDs ... 2-3
  diagnostic tests ... 2-7
  installation problems ... 2-6
  LED pattern during power-on ... 2-3
  LED patterns showing errors ... 2-4
  testing the hub ... 2-8
  testing the twisted-pair cables ... 2-8
  topology faults ... 2-7
  unusual network activity ... 2-7
twisted-pair cable
  hub-to-computer connection ... A-3
  pin assignments ... A-4
  pin-outs ... A-3
  testing ... 2-8
  using a cable tie with ... 1-12
twisted-pair ports
  LED description ... 3-3

U

unusual network activity ... 2-7

V

verifying hub operation ... 1-6

W

World Wide Web
  obtaining software from ... 2-11
WWW
  obtaining software from ... 2-11

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